

# Green tea and weight control

There is increasing evidence that green tea may be beneficial for weight, particularly in the distribution of body fats

**T**ea, which has been consumed for thousands of years in China and Japan, is made from the fresh green leaves of *Camellia sinensis*, a small tree native to Asia. Although now primarily considered as a refreshing beverage, tea may have originated as a medicinal herb. Green tea, in particular, is still associated with good health in China and Japan.

Obesity is a major health problem in the developed and developing world. Many “functional” foods and ingredients are advocated for their effects on body composition but few have consistent scientific support for their efficacy. However, an increasing amount of evidence is building for green tea. Green tea is particularly rich in a group of antioxidants known as catechins.

## What are catechins?

Catechins are a group of active flavonoids (plant-based compounds) found in high quantities in green tea. They include epicatechin (EC), epicatechin gallate (ECG), epigallocatechin (EGC) and epigallocatechin gallate (EGCG), the latter being the most abundant. Catechins are colourless, water-soluble compounds that contribute to the bitterness and astringency of green tea. Unlike black tea, green tea production involves little processing and fermentation and therefore, green tea brews are rich in catechins.

## What’s in a tea serving?

The amount of catechins in a cup of green tea is highly variable, depending on the precise type of tea, the ratio of dry tea to water and on the time that the leaves are infused before consumption. An average serving of 250ml of green tea contains between 50 and 100mg of catechins<sup>1</sup>.

## Green tea and weight management

One of the anecdotal health benefits traditionally associated with drinking green tea in China is the reduction of body fat. However, scientific scrutiny of this claim has only begun relatively recently. An association between tea consumption, particularly green tea, with a lower percentage body fat and a smaller waist circumference was found in a Taiwanese population<sup>2</sup>. Much evidence shows that accumulation of adipose tissue in the

abdominal region is a significant risk factor for development of “metabolic syndrome”, such as cardiovascular disease and type 2 diabetes, and associated effects on health.

Several well-controlled human studies, primarily conducted in Asia, reported beneficial effects on body weight, total body fat and/or fat around the abdomen following consumption of one or two servings of green tea catechins (providing ~450 to 900mg catechins) daily<sup>3-12</sup>. The duration of these studies was ~12 to 13 weeks. Participants were usually overweight and were instructed to follow their habitual patterns of food intake and exercise to minimise any effect of usual food intake and exercise on the results. These experimental designs and the amount, frequencies and beverage (or pill) forms of catechins consumed have typically reflected a realistic consumer situation. The beneficial effects of green tea catechins appear particularly apparent for abdominal obesity (refer to Figure 1).

In addition, a study conducted by the Lipton Institute of Tea using healthy, overweight Chinese adults showed that consumption of two servings of an extra-high catechin green tea beverage (containing in total 886mg of catechins) for 90 days led to improvements in body composition and a significant reduction in abdominal fatness.

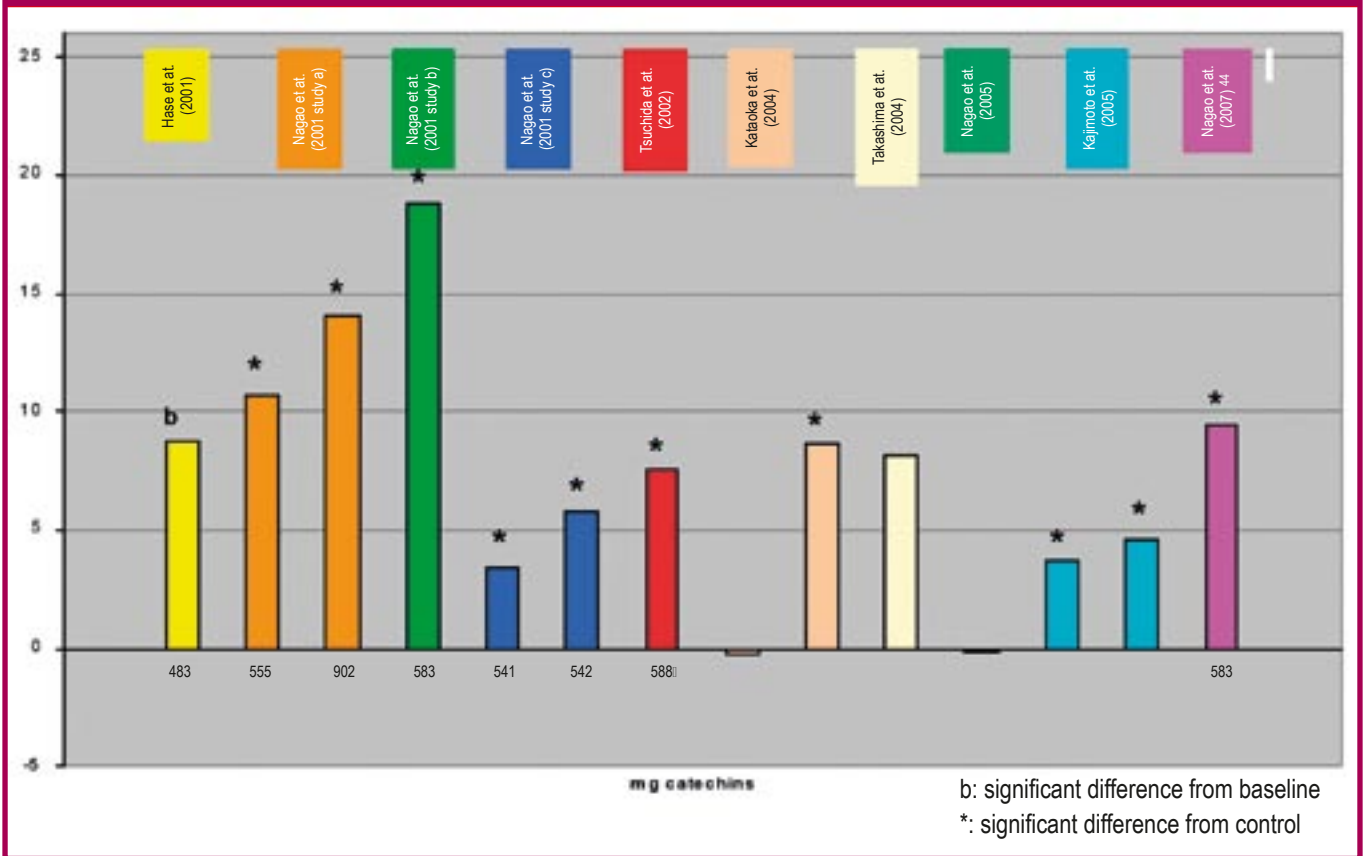
## How could green tea play a role in weight management?

There are several potential mechanisms of action for an effect of green tea catechins on body composition. First, it has been demonstrated that short-term supplementation with green tea or catechins alone at rest and in combination with light to moderate physical activity can increase fat oxidation (burning)<sup>11-13</sup>. Tea catechins are also proposed to act in a synergistic manner with caffeine to increase fat oxidation and energy metabolism.

There is also some evidence from Asian populations that chronic consumption (i.e. 8 to 12 weeks) of catechin-enriched tea (570 to 600mg catechins) at rest or during exercise may increase energy expenditure and/or fat oxidation<sup>14-16</sup>.

Scientists at the Lipton Institute of Tea are embarking on a new research programme to develop a better understanding of the mechanisms of action underpinning an effect of green tea catechins on body weight and body composition.

Figure 1: Catechins and abdominal fat reduction.



**Conclusion**

There is increasing evidence that green tea may be beneficial for weight control and improved body composition, especially in relation to body fat distribution.

Although additional work is needed to better understand the mechanism(s) of action, it is reassuring that regular consumption of green tea – which is also naturally calorie-free when consumed

without milk and sugar – may have a beneficial effect on one of the greatest public health challenges that we are faced with today. **FBA**

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